

The average number of days with precipitation ranged from 2 in the North Dakota area to 17 in extreme southern Illinois, the number increasing regularly from north to south. The principal dates of precipitation, with the areas to which chiefly confined, are as follows: 2d-3d, southern half of district, extending over northern half a day later; 6th-7th, Minnesota and Wisconsin; 7th-8th, Missouri, Illinois and Indiana; 11th, southern half of district; 14th, same as preceding; 16th-17th, Wisconsin and Minnesota; 20th-21st, entire district, save North Dakota; 23d, Missouri and Illinois; 25th-26th, North Dakota, Minnesota and Wisconsin; 27th-29th, Missouri, Illinois and Indiana; 30th-31st, Minnesota and Wisconsin. The principal storms were those of the 3d, 11th, 14th and 20th. Considerable sleet fell on the 20th and the ice storm in Illinois on that date is described in a separate article. Thunderstorms occurred on or about the 20th in Illinois, and on the 31st in parts of Iowa.

#### RIVERS.

The rivers and streams in the northern part of the district remained frozen all the month, but at the close there were signs of an early break-up. The ice in the Mississippi River at Dubuque was about 20 inches thick until the middle of the month, after which time measurements were impracticable. At the close of the month the river at that point was rising quite rapidly and the ice was beginning to break up. At Davenport the ice began breaking up on the 25th. On the 26th gorges formed on the rapids opposite the eastern part of the city, but they did not remain long. A short distance farther downstream gorges formed until the 29th. On that date the ice moved out from in front of the city; and at 6 p. m. the gage reading was 11 feet, but by 8.30 a. m. of the 30th the stage was 12.8 feet owing to the formation of another gorge a few miles below. This last gorge broke soon after the hour named, and the river fell to 11.6 feet by 6 p. m. of the 31st. At the time of the highest stage some houses in the western part of Rock Island, Ill., were surrounded by water and cellars were flooded, but no damage of consequence resulted. The ice moved out at Muscatine, Iowa, at 2 p. m. of the 30th without causing any material damage. At the close of the month the stage at that station was 13.1 feet, or almost 3 feet below the flood stage. The observer at Hannibal, Mo., reports that the ice in the Mississippi River there began to break up in places on the 17th, and there was running ice in the river, at times heavy, during the remainder of the month. No damage worth mentioning resulted at that point. By the 31st the river there had reached a stage of 13.8 feet. High water prevailed in the Des Moines River during the closing days of the month. By the 31st the stage at Des Moines was 17 feet, or only 1 foot below the flood stage, and was the highest since 1903. Considerable damage was caused to bridges by the high water and heavy running ice. The situation in Illinois is described by the section director at Springfield as follows:

During the latter part of the month the interior streams were out of their banks and much land was inundated. The Illinois River was above flood stage continuously after the 18th. At Peoria the highest stage, 19.5 feet, is the highest on record since 1908 and has been exceeded but six times since the records began in 1882. Running ice caused about \$1,000 damage to bridges, houseboats, and summer cottages. No serious damage resulted at La Salle. A dam in the Kankakee River at Wilmington went out on the 20th, flooding hundreds of acres of land and partially wrecking a power plant. The ice went out of the Rock River on the 29th, the Illinois at Ottawa on the 11th

and the Fox at Ottawa on the 19th. Considerable damage was caused at Warsaw, Ill., when the ice in the Mississippi River went out on the 26th.

The breaking of a large dike on the last night of the month on the Kankakee River in Indiana caused the inundation of 50,000 acres of land. Other dikes in that section were threatened, and the total damage was placed at \$500,000.

The observer at Hannibal, Mo., reports as follows:

With the breaking up of the ice in the Mississippi River during the latter part of March an ice gorge formed and lodged against Buzzard Island, about 4 miles below Gregory, Mo. With heavy flows of ice coming from the Des Moines and from the Mississippi above Keokuk the gorge increased steadily, until it was more than 6 miles long and 10 to 50 feet in height. It is said to have been the largest gorge ever seen in this section.

The location of the gorge was first learned on the morning of the 22d, and a sharp rise in the river was forecast to occur at points below, when the gorge should break. The forecast contained the further information that it was not believed that a stage of more than 11 or 12 feet would occur at Quincy and Hannibal. This forecast was repeated daily until the 27th, when a stage of about 13 feet was forecast for Hannibal.

These forecasts proved to be fairly accurate, as the river reached a stage of 13.2 at Quincy on the 27th and 12.6 at Hannibal at 2 p. m. on the same day.

The gorge broke at 3 p. m. on the 26th and the ice flow reached Hannibal about midnight.

There was no damage at Hannibal or Quincy, but in the vicinity of Gregory the conditions were serious. Water filled with heavy floating ice was forced over the small levee and submerged the village and spread across the bottom lands to the bluffs a distance of several miles. Many of the inhabitants had to be taken away in boats or on work trains. One house was lifted from its foundation and left standing on the railroad track. A mile or more of railroad track was washed out or pushed from its place by the ice.

The C., B. & Q. R. R. was unable to run trains north of Canton from 10 p. m., March 24, to 7.50 p. m., March 27, and their damage is estimated at \$4,000.

The value of property destroyed and damaged is estimated at \$8,000 to \$10,000.

#### MISCELLANEOUS.

The prevailing winds were northwesterly over the northern part of the district and northeasterly over the southern part. The wind movement was less than usual in March, this fact being commented on generally. The highest velocity reported was at the rate of 40 miles an hour from the northeast, at Hannibal, Mo., on the 20th.

The average percentage of possible sunshine was about 60, or about 5 per cent more than the normal. The average number of clear days was 15; partly cloudy, 7; cloudy, 9; with .01 or more precipitation, 6.

On the 19th, about 11 a. m., a local storm in Bond and Madison Counties, Ill., unroofed houses, destroyed out-buildings and twisted off telegraph and telephone poles. A few persons received minor injuries. The damage, reported by the postmasters, is as follows: New Douglas, \$22,000; Smithboro, \$7,000; Mulberry Grove, \$2,000.

#### ICE STORM IN ILLINOIS.

By CLARENCE J. ROOT, Section Director.

A severe ice storm, causing great damage, occurred on the 20th. The storm extended across the middle of the State, from Pike County on the Mississippi River through Vermilion County on the east and embraced three or four tiers of counties. To the northward of this belt the precipitation fell in the form of snow and in the south the temperature was too high to form ice. Rain fell throughout the day and into the night. At times sleet was mixed with rain. The temperature hovered slightly below the freezing point. The sleet and freezing rain produced more than an inch of slush on the ground.

Throughout the day the rain froze to all elevated objects and before 12 midnight more than a half inch of ice covered all trees and wires. The former were either broken off or stripped of many limbs, while wires snapped or sagged so badly that the poles were broken off. Street-car service was greatly hindered and the interurban lines were demoralized for about 24 hours. Trains on the steam roads had to be handled without dispatching. The telephone companies suffered most. Lines were down in every direction and it will be weeks before the damage is repaired and all telephones in working order. The storm is said to have been the worst ever known at Bement and Carlinville, and the worst since 1883 at

Decatur. The damage to the telephone companies in Springfield is \$4,000. The following notes are furnished by an official of the Central Union Telephone Co. relative to the damage sustained by that company:

The area damaged by the storm was 75 miles wide and 450 miles long, extending from Delavan, Ill., and Tacoma, Ind., on the north, to Carlinville, Ill., Pana, Ill., and Franklin, Ind., on the south; and from Quincy, Ill., on the west, to Columbus, Ohio, on the east. All telephones in Carrollton, Girard, Rochester and Chatham in Illinois were rendered unserviceable. At Virden, Ill., 25 per cent of the plant was completely wrecked. One thousand poles were down between Springfield and Carlinville, a distance of 39 miles. Four thousand poles were down in Illinois, 1,000 in Indiana, and 1,000 in Ohio. The company places their loss at \$500,000, two-thirds of which is in Illinois.